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SOCIETY OF ARTS.

FRIDAY, AUGUST 5th, 1853.

NOTICE TO INSTITUTIONS.

The Collection of Photographs which the Council undertook to form to be circulated throughout the country, and exhibited at the different Literary and Scientific Institutions, and Mechanics' Institutes in Union with the Society, is now ready. Institutions desirous of having it sent to them, are requested to make application to the Secretary. The Collection will be forwarded to Institutions in the order of their application.

The following Institution has been taken into Union since the last announcement:

281. Tamworth, Reading Room.

MATHEMATICAL INSTRUMENTS.

The Council of the Society of Arts will be glad to receive samples of the best Mathematical Instruments which any dealer or manufacturer is willing to supply to the public retail for half-a-crown; and where such instruments appear to be suitable for educational purposes, the Council will give them every publicity which their operations admit of. Further particulars, as well as a pattern of the instruments hitherto approved, may be seen on application at the Society House.

THE PAPER DUTY.

QUERIES PROPOSED BY THE SOCIETY OF ARTS, MAY 4th, 1853.

No. 4.—To Publishers.

The Three previous sets of Queries and Replies on this subject, addressed respectively to Manufacturers, to Wholesale Stationers, and to Manufacturers from Paper and Manufacturers using it, were published in Nos. 33, 34, and 36 of this Journal, pages 401, 413, and 437.

1. Has the Paper Duty any injurious influence in increasing the price of Books?

Messrs. W. and R. Chambers say, "It must enhance the price of all books, dear as well as cheap; but in the former class it is generally thought by publishers to be of little account."

Mr. J. Chapman says, "Yes."

Mr. C. D. Collet says, "Yes."

Messrs. Groombridge and Sons say, "Yes."

Messrs. Ingram, Cooke, and Co. say, "Yes."

Messrs. W. and A. K. Johnston say, "Not in our opinion."

Messrs. Macmillan and Co. say, "We fancy it would make no perceptible difference on such books as we publish."

Mr. W. Pickering says, "In my opinion, very little."

Messrs. F. and J. Rivington say, "Yes."

Mr. Effingham Wilson says, "Certainly; the average weight of a ream of demy, on which pamphlets are usually printed, is 20 lbs., the duty upon which is 2*s.* 6*d.* The manufacturer adds at least 2*s.* 6*d.* more for capital *thus* paid."

2. Is the burden of the Tax much increased before the Paper comes into use?

Messrs. W. and R. Chambers "are accustomed to consider it as ultimately not less than 2*d.* per lb., but upon vague data only."

Mr. J. Chapman says, "Yes."

Mr. C. D. Collet says, "By the charges of middlemen, who charge interest not only on the price of the paper but on the duty; without the duty books might be printed at the mill, and the middlemen got rid of."

Messrs. Groombridge and Sons say, "It probably is, by the addition of interest for the advance of capital in payment of duty before the stock is sold."

Messrs. Ingram, Cooke, and Co. say, "Yes."

Messrs. W. and A. K. Johnston say, "Our consumption being chiefly of the finer qualities, and for maps and atlases, we think these questions would be better answered by a letter-press printer."

Messrs. Macmillan and Co. say, "We don't know; but we should imagine the maker and wholesale stationer must have profit on the outlay."

Mr. W. Pickering says, "Only to a fractional extent."

Mr. E. Wilson says, "No doubt, by the capital lying dead."

3. Does it compel in many cases the heavy additional expense of stereotype plates on account of the risk of sinking capital in a large impression of a book on taxed Paper?

Messrs. W. and R. Chambers say, "We stereotype nearly every book we publish, at any rate; so we cannot say the paper duty affects us on this point."

Mr. J. Chapman says, "Yes."

Mr. C. D. Collet says, "Probably."

Messrs. Groombridge and Sons say, "We should not abandon stereotyping if the duty were repealed."

Messrs. Ingram, Cooke, and Co., say, "Yes."

Messrs. Macmillan and Co. say, "We can hardly think this could ever be the case—the duty being such a mere fraction of the outlay, even adding a liberal profit for the 'maker' and the wholesale stationer."

Mr. W. Pickering says, that "Heavy composition and slow sale are the motives for stereotyping; the cost of paper is, of course, considered, but the tax very slightly."

Mr. E. Wilson says, "It does."

4. Does it press most heavily upon cheap works intended for large circulation?

Messrs. W. and R. Chambers say, "Decidedly, as the paper is there the chief element. Slight as is the share it constitutes in a cheap sheet, it would in itself be a profit on works of that kind."

Mr. J. Chapman says, "Yes."

Mr. C. D. Collet says, "Of this there can be no doubt."

Messrs. Groombridge and Sons say, "Certainly."

Messrs. Ingram, Cooke, and Co., say, "Yes."

Messrs. Macmillan and Co. say, "We do not know."

Mr. W. Pickering says, "I have never published works of this class, therefore am not competent to say."

Messrs. F. and J. Rivington say, "Yes."

Mr. E. Wilson says, "Yes."

5. Does it compel the use of thin and inferior paper in cheap works, and thus make an invidious distinction between literature for the few and literature for the many?

Messrs. W. and R. Chambers say, "It compels the use of thin paper; and we could give a much superior paper were the tax removed."

Mr. J. Chapman says, "Yes."

Mr. C. D. Collet says, "Yes; and the high price of postage of unstamped periodicals has a similar effect."

Messrs. Groombridge and Sons say, "Yes."

Messrs. Ingram, Cooke, and Co., say, "Yes."

Messrs. Macmillan and Co. say "We do not know."

Mr. W. Pickering says, "Very common paper is now seldom used, and the difference between fine and common is little noticed by the many."

Mr. E. Wilson says, "Certainly."

6. Has it checked the production of reprints and serials?

Messrs. W. and R. Chambers say, "Greatly so."

Mr. J. Chapman says, "Yes."

Mr. C. D. Collet says, "Not nearly so much as the stamp and advertisement duties; it acts rather on the quality and quantity than on the number of serials."

Messrs. Groombridge and Sons say, "Not to a great extent."

Messrs. Ingram, Cooke, and Co., say, "Yes."

Messrs. Macmillan and Co. say, "We do not know."

Mr. W. Pickering says, "I am not aware."

Mr. E. Wilson says, "No doubt."

7. Has it hindered the public from obtaining easy access to works, the copyright of which has expired?

Messrs. W. and R. Chambers say, "It forms a great burden on such works."

Mr. J. Chapman says, "Yes."

Mr. C. D. Collet says, "I do not know."

Messrs. Groombridge and Sons say, "We think not."

Messrs. Ingram, Cooke, and Co., say, "Yes."

Messrs. Macmillan and Co. say, "We know nothing of such books."

Mr. W. Pickering says, "It may have done so, but has not had that effect upon me. The interminable extent (or nearly so) of the last copyright Act will greatly affect the literature of the present time."

Mr. E. Wilson says, "Certainly."

8. Does it limit the number of copies in editions by increasing the risk of publication?

Messrs. W. and R. Chambers say, "It bears its part in the expense of paper, &c., in limiting impressions."

Mr. J. Chapman says, "Yes."

Mr. C. D. Collet says, "Of course."

Messrs. Groombridge and Sons say, "Yes."

Messrs. Ingram, Cooke, and Co., say, "Yes."

Messrs. Macmillan and Co. say, "Not of such books as we know about, which are limited in sale, because so very few have education enough to read them, and still fewer the capacity or taste."

Mr. W. Pickering says, "I think not."

Mr. E. Wilson says, "No doubt, as large numbers alone can pay."

9. Does it diminish profits by increasing the cost of stock? and does it operate most severely upon an unsuccessful book, by becoming a tax upon waste-paper?

Messrs. W. and R. Chambers say, "It is a punishment by the Government upon an unsuccessful book."

Mr. C. Chapman says, "Yes."

Mr. C. D. Collet says, "Doubtless."

Messrs. Groombridge and Sons say, "Yes."

Messrs. Ingram, Cooke, and Co., say, "Yes."

Messrs. Macmillan and Co. say, "Not of such books as *we* know about, as they are limited in sale, and the composition is the chief part of the expense. Might there not be a drawback allowed on unsuccessful books?

Mr. W. Pickering says, "To a certain extent, it must. The Society might offer a reward for a cheap process of bleaching printed paper, and taking out the ink."

Messrs. F. and I. Rivington say, "Yes."

Mr. E. Wilson says, "Most assuredly."

10. Does it encourage literary piracy, and the substitution of foreign books for those of English authors?"

Messrs. W. and R. Chambers say, "We are not aware of its acting in this manner."

Mr. J. Chapman says, "Yes."

Mr. C. D. Collet says, "Yes."

Messrs. Groombridge and Sons say, "The law of copyright prevents piracy, and foreign reprints of English copyrights are prohibited."

Messrs. Ingram, Cooke, and Co., say, "Yes."

Messrs. Macmillan and Co. say, "The expense of labour in this country, and also the copyright, is more likely to be the temptation to piracy."

Mr. W. Pickering says, "I am not aware that it does; the copyright Act will do so in time."

Mr. E. Wilson says, "Unquestionably."

11. Please to state any facts relative to the above, or any other points bearing on this inquiry?

Messrs. W. and R. Chambers say, "It exercises a severely repressive effect upon all kinds of popular literature, including school-books and others designed for instruction and moral improvement. Were it removed, the starting of cheap serial works and publication of others would be greatly facilitated, and the materials of works of which the price is not alterable would be improved. Of a cheap weekly sheet, published by W. and R. Chambers, for the enlightenment of the humbler classes of society, the quantity sold is just about enough to clear expenses. Remove the Paper Duty, and the publishers would have a profit, and consequently be encouraged to carry on the work, which at present they are not."

Mr. J. Chapman says, "See article on 'Commerce of Literature,' in *Westminster Review*. I cannot answer the above questions better than by reference to that article."

Mr. C. D. Collet says, "The *Potteries Free Press*, a penny paper, paid on its sale of 2,400 per week, a duty of 9*s*. 4*d*. to Government, and nothing to its editor. The repeal of the duty would have caused a saving in price to the amount of 1*l*. per week, which would be a tolerable salary for editing a *country* penny paper."

Messrs. Groombridge and Sons say, "We are of opinion that many serial works are discontinued, which would be carried on if the Paper Duty was abandoned; in other words, they would pay their expenses. It is probable that the Paper Duty confines the manufacture of paper to large capitalists only, whereby the price is maintained at a higher scale than it would be were more makers in the field."

Messrs. Ingram, Cooke, and Co., say, "The paper tax is a great hindrance to enterprise in paper-making and in book-publishing. We export largely, and the time wasted in obtaining drawback is most inconvenient."

Messrs. W. and A. K. Johnston say, "We do not anticipate much advantage to the public from the reduction of the duty on paper, as we believe the difference would all go into the pockets of the manufacturers. In our own works we could make no deduction whatever. Our *Physical Atlas*, for example, sells at 10*l.* 10*s.*; the duty on it amounts to 2*s.* 3*d.* Our Charts, selling at 3*l.* 3*s.*, do not pay 2*d.* or 3*d.* duty; and all our other works in proportion. Were the duty taken off, and the price of paper reduced, we would of course be gainers, to a large amount, per annum; but we candidly confess we do not think the public would gain at all by the change. If the duty were taken off, the public would look for reductions we could not make, and consequently we would not do anything to encourage it being taken off."

Messrs. Macmillan and Co. say, "Our knowledge of publishing is so very limited (as you will see by the above answers), that we feel they will be of little use to you. We can hardly imagine that the repeal of this duty would answer any other purpose than to increase the wealth of rich publishers. But as we know so little of the matter, we do not feel sure."

Mr. W. Pickering says, "Nothing occurs to me as being so injurious to English literature as the absurd period to which copyright is extended."

Mr. E. Wilson says, "I believe it is the general practice of manufacturers to double the duty paid."

ON COMMON SALT — THE SOURCES FROM WHENCE OBTAINED, AND THE PROCESSES INVOLVED IN ITS MANUFACTURE. WITH OBSERVATIONS ON THE ORIGIN OF SALT AND OTHER SALINE BODIES.

BY W. BOLLAERT, F.R.G.S.

In accordance with the request for an essay "On Salt, the Sources from whence it is obtained, and the Processes involved in its Manufacture," the author proposes to treat more on the two first points than on the third, in consequence of his observations having been directed to the origin of salt, in the working out of which he was led to examine the sources from whence obtained, with the object of strengthening the views he had formed as to its primary formation. In 1826, being in Peru, and observing large quantities of saline matter in the Andes, at an elevation of 14,000 feet and upwards above the level of the sea, the author began to entertain serious doubts whether the ocean ever had anything to do with saline deposits at elevations much above the level of the sea. Subsequently, being in the North of Mexico, and in other localities, he again had opportunities of examining various saline districts. He was then led to conclude that the origin of salt and other saline bodies must be chiefly looked upon as volcanic, some being produced by the decomposition of rocks containing the bases of the saline materials.

Dr. Daubeny was one of the first to draw attention to the fact that salt and muriatic acid were among the abundant products of volcanoes, and his remarks made more than a quarter of a century since, fortified the opinion the author of this essay arrived at in Peru in 1826, that the greater portion of salt found from the Andes to the coast may claim a volcanic origin.

Salt, muriate of soda, or chloride of sodium, in one state or another, exists abundantly in the earth, on its surface, in the ocean, in the air, rain, in plants and animal bodies, and also in some meteoric stones. The knowledge and use of it by men is often referred to in the early pages of the Bible.

Lately a medical man (Dr. Howard) has written on the baneful effects of salt both on body and mind, stating that it produced consumption. Another gentleman of the same profession highly recommends a certain "condiment," which is mainly composed of salt. We are well aware how unpalatable food is without it; also, that a long continuance of salt provisions produces scurvy; but that a moderate quantity is absolutely necessary for our healthy existence no one can doubt: indeed, salt, next to bread, is the most important necessary of life, and one of the most interesting British minerals.

The principal consumption of salt in Britain is in the seasoning and preserving of food, the furnishing of chlorine to the bleacher, in the manufacture of muriatic acid and carbonate of soda, as a glaze for coarse pottery, in glass and soap-making, in smelting metals, in dyeing, and many other processes of the arts.

EUROPE.

England produces bay or sea salt, rock or fossil salt, and salt derived from brine springs. Since the historic period, we know that the ocean has been called the salt sea; however, posterior to this, to what extent the great mass of water was saline is a problem. The result of late researches goes to show that the saline matters in the waters of the southern hemisphere exceed those of the northern; that the Atlantic contains more than the Pacific; and that the sea is less dense at the Equator and the poles, arising from rains and the melting of polar ice. Dr. Ure found 1,000 parts of sea-water from the Red Sea, at Berenice, to yield 43 parts of saline matter. Dr. Buist, in the same quantity, from the waters of the Gulf of Suez, 40; approaching Bombay, 39; and off the Canaries, 44. It may be said that the waters of the ocean contain from about 3½ to 4 per cent. of saline and other bodies, common salt about 2½ per cent. predominating; then follow chlorides of potassium and magnesium, sulphates of magnesia and lime, carbonate of lime and magnesia, carbonic acid, iodides and bromides, ammonia, and silicic acid; free chlorine is also said to have been detected. According to some French chemists, copper, lead, and silver, are said to have been found in the waters of the ocean. The analyses of sea water show that the various seas differ in the quantity and character of their contents, which must be owing to varying saline matters washed into them, as well as to the effect of cold, in the Arctic and Antarctic regions, which has the property of producing great chemical changes, and thus affects the composition of sea water.

With the above observations on sea water, we will proceed to the subject of salt obtained from the waters of the ocean in England, such being known as sea salt, and prepared from the earliest times on the southern shores of the island. The plan resorted to was to allow sea water to collect on the surface of the earth during the summer, when solar evaporation went on to a certain extent, forming brine, which was conveyed to iron pans, and boiled; as the solution became saturated, the salt separated, and was skimmed off the surface; it was then drained and dried. With the discovery of brine springs and rock salt, the manufacture of sea salt has declined.

Brine springs are particularly abundant in Cheshire, yielding sometimes as much as 20 per cent. of salt, which, when manufactured, is known as white or boiled salt. In the coal formation of Durham, at Batley, a spring yields 26·400 gallons in twenty-four hours, and gives in 100 parts:

Salt	87
Chloride of Calcium	43
Carbonate of Lime and Silica	4
	100

The brine at St. Laurence, near Newcastle, gave from one gallon, weighing 403,840 grains:

Salt......................	72·8
Chloride of Calcium	21·1
Chloride of Magnesium....	4·8
Sulphate of Lime	1·1
Iron	0·2
	100·0

In the Newcastle coal field, the brine comes up through the floor of coal, at a high temperature, and holds three times more salt in solution than sea-water; it flows from a fissure in one of the dykes, and its origin is very deeply seated. It would have been natural to conclude that brine springs had their origin from masses of rock-salt in the bowels of the earth, for fossil salt had been known to exist from early times, and in various parts of the world; however,

Rock or Native Salt was first discovered in this country at Northwich, in 1670, in beds, or rather masses, accompanied by indurated clays, and much sulphate of lime. On making a horizontal section of a bed of rock-salt, various figures are observed. The lines forming the boundaries of these orbicular masses consist of pure salt; in other parts earthy matters are mixed with the saline. May we not here suppose that the primary origin of the salt is volcanic?—having been formed from its elements in the interior of the earth, it would be ejected in a fused state, or in vapour, through fissures, or as a boiling saturated solution, at times with mud, and fine particles of rock. In the saliferous marls of the new-red sandstone in England, volcanic scoriæ have been found. Repetitions of such volcanic action have occurred, which would account for the several layers, or rather masses of salt and brine springs, found in what is called saliferous strata, as well as amongst primary rocks. This species of volcanic action has taken place at different periods, and at various elevations; and in this way we may probably account for the existence of rock-salt generally. Some rock salt is deposited by sublimation from volcanoes; this it is proposed to call primary. Salt and saline bodies, in general formed in elevated regions, would be dissolved by rains and melting snows. Brine springs would appear in lower regions, which would give rise to local deposits, to be again washed downwards by streams into lakes; these would overflow, and be discharged by rivers into the sea. To the author, a strong proof of the primary origin of rock salt, and that it has not been formed from sea-water, is its chemical composition. A specimen examined by Dr. Henry, from Cheshire, gave chloride of sodium 98·32 per cent. That of Vic, as stated by Dr. Ure, gave chloride of sodium 29·300; sulphate of lime, 00·005; clay and insoluble matters, 00·020. The red variety of Vic gave 99·80 of salt. How different the composition of this rock or fossil salt, from the saline and solid contents of sea water, and which points to a different origin. It appears, then, that we must abandon the idea that rock salt has had its origin from the ocean; for if it had, we ought to find it to be composed of about the same quantities and qualities of matter as are met with in sea-water. The ocean contains barely 4 per cent. of saline matters, and the author is led to conjecture that the sea was less salt in former times, and that originally it may have been fresh water. If this view be correct, the sea is getting gradually salter, but at what rate there is no data to show. Could such be ascertained, we might calculate a period when the ocean would be saturated, and commence depositing its saline contents.

During the war the duty on salt was 30*l.* per ton, when it produced a revenue of 1,500,000*l.* It was repealed in 1823. The average price of eight varieties of salt at the works, in Cheshire, in December, 1852, was from 3*s.* 6*d.* to 12*s.* per ton for rock salt; for stoved bagged, common white, it was 6*s.* per ton. It has been calculated that each individual in Great Britain consumes about 25 lbs. of salt annually. Taking the population at 27,019,572, this will give, as the amount of consumption . . . . . . 301,558 tons.

The exports in 1845 were 360,000 tons.
At present (5th Jan., 1853), it may be estimated at . . . . 496,649 ,,
Consumed in various manufactures, and as a fertilizer . . . . 200,000 ,,
Tons . 998,207

Calculating the average value at the pit's mouth at 7*s.* per ton, this will give a value of 349,322*l.* Four fifths of British salt is made or raised in Cheshire. There are twenty-nine salt mines in that county, and ninety-seven salt-works. One million of capital is invested by forty-seven proprietors, employing some 8,000 people. From 1810 to 1817, under the high duties, 2,100,000 bushels were annually made. From 1827 to 1834, after the duty was abolished, 10,307,752 baskets were manufactured.

Scotland.—A small quantity of sea salt is still manufactured.

Ireland imports much salt from England. The red marls of Carrickfergus are 800 feet thick, the lower 120 feet of which is a bed of rock salt. Colonel Portlock contends that it could not have had its origin from igneous action at the bottom of the sea, because sea-water is a very diluted solution of salt, and that the presence of rock salt cannot be considered as indicative of any class of rocks. It is said that there are indications of the existence of borax in Ireland.

France.—Some sea salt is made on the north coast, but the greater portion is obtained from the ocean lagoons in the Mediterranean. The Japanese method of making salt has been practised on the coast of Lower Normandy since the ninth century. This consists in collecting the sand of the sea-shore, which has been left dry by the tide, and forming it into a kind of filter, through which sea-water is allowed to percolate; its strength is thereby increased, and it is then evaporated to dryness. The recent interesting researches of M. Balard on sea-water, and the bittern of the salt lagoons of Heraut, show that when sea-water has furnished the greater part of its salt, it easily yields, amongst other products—1. Sulphate of soda; 2. Chloride of potassium; 3. Chloride of magnesium: all of which have a commercial value. From the first is manufactured soda, for the use of the soap-makers and others; the second can be easily converted into artificial potash; and the last has only to be heated to yield muriatic acid. Salt, saline, and acidulous springs, are met with in various parts of France, and at St. Nectaire in Auvergne, a hot saline spring rises through granite. Rock salt exists in six different masses at Vic, in the Meurthe. The annual consumption in France by each individual is about 19 lbs. The value of sea salt for 1844 was more than 462,000*l.* There is still a considerable duty imposed on salt; and it is asserted, that the oppressive Salt Laws, which sent from 4,000 to 5,000 persons to prison annually, had no inconsiderable share in bringing about the great French revolution.

BELGIUM.—Some sea salt is manufactured on its coasts, but the greater portion is supplied by England.

HOLLAND imports principally from England. In Belgium and Holland the annual individual consumption is about 20lbs.

SPAIN.—Much bay salt is procured from the sea-shore near Cadiz. The salinas, or salt-pans, are very extensive; the whole of the evaporation being carried on by solar heat. Heaps of salt may be seen, containing from 3,000 to 4,000 tons. The inexhaustible rock salt mass of Cardona, which gives rise to brine springs, is 1,500 feet above the sea, composing a mass of salt three miles in circumference, and from 400 to 500 feet high. Some of it is very pure; but usually clay and selenite accompany it. Catalonia is characterised by ridges running north-east and south-west; the former are interfered with by intrusive rocks of granite, porphyry, and lava. The oldest sedimentary rocks are schists resting on granite; on these repose mountain limestone, with beds of coal and red marly sandstones, with rock salt. An isolated batch of the latter supplies the salt of Cardona. Cardona being the property of the Crown, is worked on its account, the salt selling at the rate of 7*s.* 6*d.* per 130 lbs. There is another collection of rock salt at Minglanilla in Valencia. It is one enormous block, and not scattered in layers; 50,000 bushels are annually extracted. Salt lakes, springs, and even salt streams, are met with in various parts of the country. Glauberite is found in Murcia imbedded in rock salt. Nitrate of potash is met with at Zaragosa; and at Merida there is a natron lake. Near the Vega of Grenada there are salt-pits.

In one of the Cape de Verd Islands, known as Salt Island, the article is formed by solar evaporation, in natural ponds among the rocks. The greater portion is exported to Buenos Ayres, for the large quantity of salt found on the great plains of that country, being of a different chemical composition, is not found to be so well adapted to the purposes of preserving meat as bay salt, on account of its being nearly a pure chloride of sodium, and not containing the deliquescent chlorides. In the *Encyclopædia Britannica* (1797 edition) it is remarked that British salt from brine springs is not so good for curing provisions as that of Spain and France. Dr. Henry was employed by the Cheshire salt makers to disprove this; but his statement is not satisfactory.

PORTUGAL.—A very large quantity of bay salt is procured by solar heat in the sea lagoons of St. Ubes. The greater portion is exported to Newfoundland, for the curing of cod fish: 500,000 bushels are sent to England. There are above 200 saline and mineral springs in Portugal, and it is said that rock salt is met with in the interior.

In SWITZERLAND, brine springs abound. Those of Bex contain 14 per cent. of salt. The salt formation of Bex has been referred by some writers to the transition series of rocks.

HANOVER.—There are important salt-works at Salgetter. Brine springs occur in many of the smaller German states.

PRUSSIA.—Salt mines exist at Gottesgabe, and other places. The brine springs of Halle yield 300,000 tons annually, selling for about 268,000*l.* Each individual consumes annually about 20lbs. of salt.

HESSE.—Salt and lignite-works are found at Salhausen. At the salt-works of Kreuzenach, the mother-liquor produces iodine and bromine.

SAXONY.—Brine springs are met with in few places, but as they are only slightly impregnated with salt, evaporation by means of fuel would be too costly a method of obtaining it. The process of graduation by thorn houses, as adopted in Sardinia, was introduced into Saxony in 1559.

BAVARIA.—Berechtesgaden yields annually 7,500 tons of rock salt. There are other spots yielding this mineral. Kissingen has salt-mines and brine springs.

BADEN.—Rock salt is procured in abundance in the Black Forest; there are also brine springs.

BRUNSWICK has four principal salt-works from brine springs. Boracite is found in the gypsum of the Kalkberg. At Lippe Detmold, to the west of Hanover, there is a brine spring yielding annually 36,000 bushels of salt.

WURTEMBURG.—The salt-works are the property of the crown, and produce 24,000 tons annually. At Halle the brine-springs produce 90,000 cwt. annually. From the section of the rock salt in the Muschelkalk at Wimpfen, it will be seen that gypsum is enclosed by a deep layer of shell limestone, containing salt as a separate mass. Some writers have supposed that this mass of salt has been deposited by the sea, or by saline lakes: but Dr. M'Culloch says, "They are special and original deposits in whatever way produced; as of the design we cannot doubt, though no other end should have been in view, than the uses of this substance to man." At Wimpfen the gypsum is well developed; indeed, the substance is a generally accompanying compound all over the world, wherever salt in its various forms occur.

DENMARK imports 600,000 bushels per annum from England.

SWEDEN and NORWAY import about 250,000 bushels of salt per annum from England. In Jutland the salt fogs are very injurious to the foliage of trees, and hurtful to grass.

AUSTRIA.—A small portion of bay salt is made on the south shores; a large quantity from brine springs, of which there are, including those of a mineral character, as many as 1,500. The largest masses of rock salt in Europe are those of Bochnia and Vieliezka; numerous other masses are met with along each side of the Carpathian Mountains, extending into Moldavia and Suabia. Some geologists state that this great salt deposit of Austria forms a distinct member in the series of stratified rocks, occurring with limestone, clay, gypsum, stinkstone, slate, and not unfrequently with bituminous formations; and it may also be remarked that the deposits, or masses of salt among rocks of all ages, is an interesting and important fact. Bochnia and Vieliezka produce 900,000 cwt. annually; 200,000 of which goes to Prussia, 150,000 to Russia, at such prices as will remunerate the Austrian government; the remaining quantity is sold at arbitrary prices. The cost price of salt sold in Prussia and Russia is about 20*d.* per cwt., while the Austrian government sells it at *five times* that price to its own subjects. Ischl, in Upper Austria, yields rock salt, and the mountain that contains it has many chambers, which are filled with fresh water, so as to dissolve the salt; it is then drained off and conducted to the boiling-houses in the town of Ischl. The rock salt-mines of the Tyrol near Hall, in the valley of the Inn, are made to yield salt as at Ischl. 120,000 cwt. are produced annually, yielding 100,000*l.*, but leaving a clear revenue to the crown of 80,000*l.* Thorenberg, in Transylvania, produces annually 250,000 cwt. of salt. This useful mineral is found plentifully in Croatia, Moravia, Sambar, Styria, Bohemia, &c., &c. In the Transylvanian district of Austria alone, there is sufficient salt to supply Europe for thousands of years. The Platten Sea, or Balaton

Lake in Hungary, forty-six miles long, and twenty-seven to thirty-six feet deep, also yields salt. The annual consumption of each person is 20lbs.

Russia and Poland for the most part form one vast plain, which is bounded on the east by the Ural Mountains; and on the south by the Carpathian and Silesian chains. In Poland, in the tertiary strata, there occurs a most extensive deposit of salt. Sir Roderick Murchison, in speaking of the salt steppes of the Orenberg, says, the surface consists of gypceous marls and sands, of the age of the Zechstein. He thinks that the rock salt and brine springs occur all over the lower sedimentary rocks of Russia, from great depths below the old red sandstone to the Zechstein, and the overlying marls and sandstones, and that this is pierced in the vicinity of the salt-works of Illetzkaya, by small pyramids of rock salt. In some parts of Asiatic Russia salt is obtained by the congelation of sea water; one of the effects of a low temperature is to decompose a portion of the salt, and to convert the sulphate of magnesia of the brine into sulphate of soda and chloride of magnesium. In Poland, salt is found to be accumulating in lakes and marshes, the saline matter being washed down from superior elevations. Vast quantities of salt—sometimes called rock salt, but which ought rather to be denominated surface salt—occur in the parched plains of the Kirghis and elsewhere; and also around the Caspian and Aral. Nitre is found in some parts of Russia. The produce of the Russian salt-mines in 1833 was 491,862,299 kilogrammes. The water of the Caspian Sea is as salt as that of the ocean, and also even more bitter. That of Lake Aral is less so; salt-bearing rocks have been discovered in the vicinity of the latter lake. Lake Aral, as well as some others in the Old and New World, are on the decrease, which may be attributed to the varying quantity of moisture in the air. Lieut. Maury, of the United States navy, observes, that in regarding the winds as a geological agent, we can no longer consider them a type of instability. We rather behold in them the light of ancient and faithful chroniclers, which reveal to us truths which Nature has written upon their wings in characters as legible and enduring as she ever engraved on the history of geological events upon the tablet of rock. Lakes Inder and Elton, in Asiatic Russia, yield much salt. The individual annual consumption is 21lbs.

Sardinia yields bay salt, particularly at Cagliari. The waters from the brine springs of Moutiers contain 1·83 per cent. of saline matter, which are most economically evaporated by passing them through Thorn Houses. When concentrated to 12 per cent., sulphate of lime is deposited on the twigs. At Moutiers 2,250,000 lbs. of salt is annually made, and 187,000 lbs. of sulphate of soda. The government receives 150,000 francs for the products, bearing a profit of 50,000 francs.

Tuscany.—Some bay salt is collected on the coasts. Rock salt is procured from the mines of San Leopold. Salt is also made from brine springs. Boracic acid is found in several muddy lakes, in the midst of which small craters are opening, which disengage aqueous vapours changed into boracic acid, borate and sulphate of ammonia, iron, lime, and other salts. Manufacturers complain of its high price (*5l.* 10*s.* per 205 lbs.), so that the glass manufacturer has to pay about one shilling per pound in its available form of borax as a flux. A new boracic acid mineral is now imported from the province of Tarapaca, in Peru. It is found among the nitrate of soda-beds. Sales have been effected of it in this country, at from 60*l.* to 72*l.* per ton, principally for the Potteries. Thibet is the only other known source of boracic acid, being imported as borax or tincal.

Naples and Sicily.—Rock, or fossil salt, is met with as a sublimation from volcanoes, particularly at Vesuvius. It is sometimes in masses sufficiently considerable to occasion a contraband trade. Rock salt occurs at Cosenza in cretaceous rocks; and Sir Charles Lyell observes, that there are deposits of gypsum and salt in the blue clay, and veins of it in the limestone formation of Sicily. During the eruption of Etna in 1852, much muriate of Ammonia was given off with the lava, ashes, and sulphurous vapour.

Lipari Islands.—Small quantities of boracic acid have been found at Vulcano. Bay salt is also made.

Greece, and Turkey in Europe.—Rock salt is found in abundance in the Balkan; also in Moldavia and Wallachia. Salt-pans exist on its coasts. Milo exports bay salt.

(*To be continued.*)

HOME CORRESPONDENCE.

INVENTORS *versus* PATENTEES.

Sir,—I read with much interest some weeks ago, an ably written letter in the Journal of our Society, on the very important subject of Patent-right, from a correspondent who signed himself "Cosmos;" and I am induced to venture a few remarks upon it, not so much in answer to the rather dashing invitation of a reply with which it winds up, as from a conviction of some years growth, which drew my eye to the title of the letter, and to a perusal that, in spite of a happy phraseology, and some well-turned truths, tended strongly to confirm my views on the opposite side of the argument.

Your correspondent is an advocate, I may say an indignant advocate of Patents; and calls to account, somewhat roundly, Mr. Scott Russell, and the other "eminent persons" whose sentiments he expressed, for reiterating an opinion (by no means confined to any exclusive knot of thinkers), that patents are upon the whole rather injurious than otherwise to the interests of science, and the advancement of the arts; and prejudicial instead of promotive to the objects which the State has in view in granting those limited monopolies to individuals, and instituting an exceptional legislation in their favour, upon grounds of supposed public policy.

And I would beg in the outset to draw your correspondent's attention to these latter words that I have used, because he appears to me, with submission, rather to mistake the ground of the argument throughout his letter, in treating the question too exclusively as one between Patentees and the Public; as though the controversy were about some aboriginal right in the former which it was threatened to deprive them of, instead of as it really is, a question as to the solid truth of the principle upon which the State extends to Patentees the benefit, or supposed benefit, of an exception to the general policy of English law.

I shall probably not be taxing his candour too highly in requesting Cosmos to bear in mind that the proof of the case falls not upon those who question the benefit of patents but on the defenders of them. They are a class protected by exceptional legislation; a thing to be always watched narrowly, and adopted only on the strongest grounds of special claim. Whether these grounds exist, or exist to an extent to justify the aberration of the law from its regular course, is the true question at issue. And if it can be shown that the advancement of science, and its application to the arts is not promoted, nor the efforts of inventors encouraged by the Patent laws, I submit that his case is lost; and that the hardship he assumes would accrue to bonâ fide *Inventors* by the abolition of the law, is illusory.

I say, illusory, because it has been brought to experimental proof over and over again of late years (as if it had not been an axiom of logic and geometry thousands of years ago), that what is best for *all* is best for *each;* that the whole includes all its parts; that what is true of a class is true of all comprehended in the class. The "protectionist" doctrine, in whatever shape it dresses itself, or re-appears, proceeds upon the converse of this proposition, and attempts in fact to invert it. That *that* doctrine is erroneous I am spared the showing; that the argument in favour of patents ranges itself under that doctrine, and is an insidious offshoot of it, I have long believed in principle, and will attempt to show.

But I must, in the first place, take leave to correct the verbal critic who tells Mr. Denison, and the other "eminent persons," that they "have failed in mastering the first principles of patents, or they would not have imagined them an impediment to science;" because, argues he, "A patent is for an *art,* the artificial application of some natural principle—not for the *science* or knowledge *on which the art may be based.*" Doubtless: and had your correspondent himself "mastered the first principles of patents," he would surely have seen the force of the connection which his own pen has followed, and which the State has recognized, in the public policy on which patents are granted, viz., to encourage the advancement of science *by* the protection of its application to special branches of art. In the course of a very few words your correspondent uses the very ellipse he took exception at. A *patent for a science*—the absurdity raised by Cosmos—he is welcome to the nonsense of: but a patent for a particular branch of art, in order to encourage "the science on which the art is based," is intelligible enough. The suppressed premiss of the law,—that the granting of patents *does* thus advance science,—Mr. Denison, with "other eminent persons," doubts the truth of. And so do I. And if Cosmos will be good enough to accept Mr. Scott Russell's short statement of the question, that *Patents instead of advancing, operate as an impediment to science,* we shall have the true issue before us, without any sparring about words or phrases.

Science is public property. True, replies Cosmos, but a special or "artificial" application of it—in short, an "invention,"—is private property, as much as a book is. Granted; but to follow out his own illustration, suppose the possibility of two men writing precisely the same book, unknown to each other, at the same identical *time,*—to which would he grant the "patent"? Who is the special proprietor of the thoughts contained in the book? The question is absurd, he will say, because the thing is impossible. Then his illustration fails, because *the other* IS possible: and not only possible, but a thing of by no means uncommon occurrence. And for this simple reason, that the unfolding truths of science operate, at each epoch of its advancement, on a whole generation at once, and set many minds at work in the same channel, and in the same drift. For one that takes a patent out, a hundred are at work upon the same vein. All of a sudden the arm of labour is arrested: "Stop! you must not work in those 'diggings' any more! 'Mr. Smart' has got a patent! you must leave them there *placers,* and absquatulate, I guess,—they all belong to 'Mr. Smart.'" The hundred "hands" stop of course. The first thing they do is to read Mr. Smart's "specification;" and there what do they find? The whole ingenuity of language strained to its utmost to specialize and confine to Mr. Smart for fourteen years, all the possibilities of that particular application of science to that particular art. Language is a powerful thing; it may be made to comprehend by inference a great deal more than it actually defines; it may cover *by mere accident of expression,* a great deal that the most ingenious writer was not master of, and never meant. And it need not be pointed out how its aptitude and elasticity in this respect have been the everlasting battle-ground of contested patents. What is the consequence? Why, that patents have become the very synonym of litigation; not less terrific, it is true, to Patentees themselves than to that infinitely larger class of *Inventors* who with equal, possibly superior merit of thought and labour, shrink from an arena strewn like the den of Cacus with ruined fortunes and broken hearts; *vestigia nulla retrorsum!*

Will any body say that this is not justly called (by a most fair ellipse of language) an impediment to Science, who understands how discovery and invention in art *react* upon the advancement of knowledge? Is it not, in fact, true, that it is by discoveries in the various branches and details of art that science chiefly makes progress, just as the tide is brought in by *many* little waves? If a cause be discovered operating in detail to check ninety-nine out of the hundred of these small tributaries, and throw them back upon themselves, *may* it not be justly said that the flood itself is obstructed?

But, then, the interests of the individuals, Patentees and Inventors—(whom Cosmos, by a curious *petitio principii,* confounds under one head, assuming that in urging the claims of patentees he is the advocate of inventors)—what can be more idle than to bring forward a string of names of patentees, great and small, in proof of the benefit of patents? He might as well give a list of all the old women who have been hanged, drowned, and burnt, in attestation of the doctrine of witchcraft. Would his witnesses themselves, if brought into court, give their evidence in his favour? Will those who know their private biography, respectively, be ready to attest the conclusion he assumes? One instance may be little among so many; but for one of the greatest names he quotes, I can myself, from private family resources, speak sadly to the contrary. And for his one instance on the other side,—grant that "Dalton took out no patent and was nearly starved"—had there been *no such things as patents in his day,* would he have been "nearly starved" then? Who shall say so? Who shall say he was not a victim to the very system which, as Mr. Scott Russell well remarks, "compels men to take out patents, not so much to prevent others using them as to secure *to themselves* the right to do so, lest some one else should make a patent of it, and they be prevented using their own discovery." "*While I am coming, another steppeth down before me.*"

Does not Cosmos see that if Dalton was nearly starved, it may have been precisely for the reason Mr. Scott Russell here indicates—not because he "did not take out a patent," but because somebody else *did* who had less right to it? Cannot he see that the very instance he gives may be a case in point for the opposite argument, and that had there been *no* Patent-law in existence for another to make an unfair engine of against the true inventor, Dalton might have had his full rights awarded to him by the public voice? Is it not rather a feeble mode of argument, which, conceiving only the state of things existing under a system of legislation proposed to be abolished, argues upon the results of such abolition *from* the existing phenomena? As who should say, "Dalton walking in the dark, without a torch, lost his way and was drowned,—*ergo*, whoever walks without a candle will be drowned,"—by way of reply to a proposition that daylight is better than torch-light?

Has Cosmos mastered beforehand all the possible phenomena attendant upon the removal of a human law which assumes to patch up a deficiency in God's moral and physical government of the universe? May there not be, after all, in the nature of things, a reward for *ingenuity* as well as for *industry*, which even Cosmos would by degrees come to see if officious "Legislation" would only "get out of the way." Is it only by "Act of Parliament" that we find Labour productive, Industry successful, persevering Genius triumphant, and every other human gift and quality tending to its appropriate and cognate reward? Must poor Ingenuity have a special parliamentary go-cart all to itself, as having been forgotten in the moral fitness of creation, and left to the after-thought of human jurisprudence, and the mercy of St. Stephen's? What can patent laws really *do* for inventive genius followed up by active practical exertion—"What can Alexander do for Diogenes?" "Only get out of my sunshine!" The fact is, that patent laws instead of having vindicated their own utility and excellence in practice, as Cosmos assumes, have done little more than set up a great question in men's minds by their inefficacy for *both* the ends they are intended to achieve, the advancement of science, and the protection of the inventor. By some occult law of mental constitution, it happens that the smart man who sucks his neighbour's brains is naturally the greatest adept at seizing upon such privileges and priorities as "legislation" can afford: whilst in the real history and nature of Inventive Genius the race is not always to the swift, nor is true merit in this more than other departments of human excellence, the most forward to assert, or even to defend, itself. It is true the patent laws do not even profess to discriminate merit, or test originality: "First come, first served," is all their philosophy; with what result let the endless volumes of our law reports declare. But meantime they stifle the public operation of principles the action of which they displace, and virtually assume, by being commonly thought to fulfil them. A list of men who have made fortunes under the existence of patent laws proves no more than would a counter list of those who have been ruined under them. Experimental evidence could only be obtained from a fair comparative history, were that possible, of the progress of invention and discovery, and of the individuals from whom they emanated, during parallel periods *with* patent laws and *without* them. I suspect the result would be such as—if not to convince Cosmos and those who believe in the efficacy of legislation for these purposes—at any rate to suggest that there may be philosophic and substantial foundation for the views of those who venture to doubt the benefit of patent laws, both for the interests of science, and the reward of ingenuity and talent,—amongst whom may be enrolled,

Sir,
Your obedient Servant,
C. W. H.

STATISTICS OF INSTITUTIONS.

SIR,—I have been for some years the President of a Literary and Scientific Institution in one of the home counties. I have taken a great interest in the union of Institutions with the Society of Arts. I attended both the Conferences of Representatives, and am a regular reader of your Journal.

I have been for some time of opinion that sufficient information respecting the Institutions had not been collected by your Society; and I hail with lively satisfaction the appearance of the new Circular of statistical queries.

My object in writing is to urge upon the Committees and Secretaries the very great importance of exercising the utmost possible care in filling up the blanks of your schedules.

I really think that if they are well filled up by the Institutions, and well digested by your Society, they will form one of the most valuable and instructive documents that has been published in connection with national education and social progress.

I perceive that many of the queries are eminently suggestive; and when the officers of an Institution are compelled to give a negative reply to the 21st, 22nd, 24th, 25th, 26th, 27th, 29th, and 30th questions, it is to be hoped that they may be led to ask themselves "the reason why" they have neither maps, nor museum, nor local prints, nor recreation ground, nor excursions, nor soirées, nor exhibitions, nor any connection with the neighbouring schools.

With reference to the third query, I would suggest that in large populations having no Institutes, an effort to establish them might properly be made by the Society of Arts.

With reference to the 4th, I would observe that in my own Institution, we have three classes of subscribers, paying a guinea, half-a-guinea, and a crown per annum; and that the first class alone manages our affairs. I have long been anxious to admit all three classes to the management; and I shall look with great interest for the replies to your 9th Query.

The 10th Query, respecting the Classification of Subscribers according to rank, profession, &c., must elicit very curious and interesting information. Are the Institutions countenanced by the neighbouring peers, by the local magistrates, by the representatives of the people? Do the Clergy of the Established Church hold aloof? Do the Dissenting Ministers come forward? Do the farmers as well as the shopkeepers, the agricultural as well as the urban labourers, subscribe to the Institute? Is the fair sex fairly represented there? Is the rising generation, with its pupil teachers and model schemes of education, entering there in adequate numbers?

The classification of the books circulated will exhibit some curious results. It may be a troublesome job to the Librarians; but its very great importance will lead them, it is to be hoped, to grudge no trouble that may be requisite to ensure a faithful return.

I could wish that you had inquired not only what number of Lectures have been delivered, but what were their subjects, under general heads, such as literary, scientific, &c.

I trust that no Institution will hesitate to give full particulars respecting its tenure and its financial condition. We must not imagine that the full benefits, or indeed any of the real benefits, of our union with your Society can result from your operation without our own hearty, active, and continuous co-operation. It is our place to furnish information, the raw material, which it is your place to receive, to sort and arrange, to work up, and to re-produce in a shape that will be at once interesting and useful to ourselves and to the public at large. I am, Sir,

Your faithful Servant,
A PRESIDENT.

TREATMENT OF FLAX.

Flax Works, Crediton,
August 3rd, 1853.

SIR,—I have read with much interest the paper in the last number of the Society's Journal, relative to the cultivation of flax in India.

What is wanted there and elsewhere to render flax a profitable and desirable crop, I believe to be cheap and efficacious machinery, for separating the fibre from the straw without steeping or retting it. If not, why is it not more generally grown? Spinners unfortunately are at present strongly prejudiced in favour of steeped flax; and for very fine yarns *well-steeped* flax has undoubtedly some advantages; but considering the great difficulty and risk of the process, and the very large proportion of flax that is injured by it, through want of necessary care and skill, and rendered unfit for any but inferior purposes, I feel confident they would find their interest in promoting and encouraging the preparation of flax without steeping.

Flax of greater strength, and of good medium quality, may at all events be uniformly obtained from unsteeped flax, and I believe it only requires a proper system of flax treatment of this kind to be introduced, in order to the free and extensive growth of this important raw material; whilst its greatly diminished cost, consequent on such treatment, would place "clean linen" far more within reach of the humbler classes than it is at present, and largely increase the general use and consumption of flax.

I send you a sample of bleached flax yarn, spun from flax of my own growth, and prepared without steeping or retting, by machinery which I have just patented in the United Kingdom. As soon as I have completed my foreign patents, I shall be happy to give you some description of it, and of my accompanying new mode of bleaching.

Meantime, I remain, yours faithfully,
EDWARD DAVY.

GRATUITOUS LECTURERS.

Highgate Literary and Scientific Institution,
1st August, 1853.

SIR,—With reference to the forthcoming list of Lecturers recommended by Institutions in Union with the Society of Arts, I have been looking over a list of those who have lectured at this Institution, from its foundation, in January 1839, up to the present time; and I have been much struck by the number and excellence of our gratuitous Lecturers.

Exclusive of concerts, musical entertainments, Shakspearian readings, polyphonics, dissolving views, and conjurings—for we do not despise such amusements here—we have had 207 Lecturers; and of these 126 have been gratuitous; and only 81 have been paid for.

Among the gratuitous Lecturers were the following clergymen:—the Rev. R. C. Smith, now of the Rectory, Stepney; the Rev. Derwent Coleridge, Saint Mark's, Chelsea; the Rev. R. G. Gleig, Chaplain General to the Forces; the (late) Rev. Thomas Streatfield; the Rev. Gerard Smith, then of Cantley, Yorkshire; the Rev. Lewis Evans, now of Sandbach, Cheshire; the Rev. George Williams, Saint Columba's; the Rev. Richard Burgess, Upper Chelsea; the Rev. William Harness, of Knightsbridge; the Rev. Thomas Jackson, formerly Bishop Designate of Lyttelton; the Rev. James Booth, Society of Arts. All of their lectures were good, and some of them very admirable. We have also had capital gratuitous Lectures from Mr. R. D. Grainger (who fortunately for us lives here); from Mr. Le Gros Clark; Dr. Latham; Mr. Henry Reeve; Mr. Hullah; the late Mr. Butler Williams; Mr. C. Woodward, F.R.S.; Mr. Sowerby; the late Professor Cowper; Mr. J. E. Gray and others.

It will be seen on comparing our gratuitous lectures with our paid ones, that the former are to the latter in point of number as rather more than three to two; and in point of quality I do not hesitate to say that the unpaid lectures have been at least equal to the others. I hope therefore that the Institutions will not too readily adopt the conclusion that gratuitous lectures are valueless.

I am, Sir,
Your obedient Servant,
HARRY CHESTER.

THE PAPER DUTY.

6, Halkin-street West, Belgrave-square,
Aug. 2nd, 1853.

SIR,—Perceiving that you are continuing in the Journal of our Society the list of Queries and Answers in reference to the Paper Duty, I beg to trouble you with the following facts, to show the prejudicial influence the present duty has upon the papier maché trade, offering, at it were, a premium to the inferior manufacturers in this material.

The best quality of papier maché articles are produced by sheet paper, pasted upon moulds, or pressed in dies, and the whole of this paper, including the waste (which forms a considerable proportion of the quantity used), pays the duty of 1½*d.* per pound, while the *pulp* of paper from which the inferior goods are produced pays no duty whatever, unless manufactured into boards not exceeding a quarter of an inch thick, which are chargeable with duty, to prevent their being used instead of mill board, to the disadvantage of the revenue.

Some years ago our firm called the attention of the Excise to the anomaly thus created, when the authorities admitted the injustice; and having instituted inquiries, made various suggestions (as to modes of drawback, &c.,) with the view to remedy the difficulty; but no efficient means could be discovered to answer this end, and yet ensure to the Government sufficient security against fraud. I remain, Sir,

Yours most respectfully,
J. BETTRIDGE, JUN.

TO CORRESPONDENTS.

Notice.—Members, and others, who can furnish or obtain original information or suggestions on the subjects included in the Society's Premium-list, or other topics connected with the Society's various departments of operation, are invited to communicate the same to the Secretary, in as condensed a form as possible, for the purpose of being either read and discussed at the evening meetings, or inserted in the Society's weekly Journal. Anonymous letters cannot be attended to. All communications, whether the author's name is to appear or not, must be accompanied by the writer's name and address.

Members of the Society who do not receive the JOURNAL regularly, are requested to give immediate *notice to the* Secretary; and, in order to prevent mistakes, they are particularly requested to signify any change which they desire to have made in their address, with as little delay as possible.

Country Institutions.—Correspondents who are so good as to send reports of proceedings of Local Institutions, are requested to forward them immediately after the Meeting to which they refer, and not later than Tuesday morning, if intended for insertion in the following Friday's Journal.

A. Sub.—Legal questions cannot be answered in the Journal; but it may be stated, that the Paper and Collodion processes in Photography are unfettered by any patent rights, except the taking of portraits for gain. As to the Daguerreotype, although there are patents in existence, it is practically free.

List of Lecturers.—With reference to the circular relative to the formation of a General List of Lecturers recommended by Institutions, and to the Form which accompanied it, the Secretary has to ask, as a particular favour, that the Form may be filled in and returned immediately.

MEETINGS FOR THE ENSUING WEEK.

WED. Royal Botanic, 1.—Annual Meeting.
Architectural Assoc.—Conversazione.

MISCELLANEA.

New York Crystal Palace.—The Exhibition of the Industry of all Nations was opened at New York, on Friday, the 15th of July, by the President of the United States, assisted by various diplomatic and official authorities. From 6,000 to 8,000 persons are said to have been present, and all the available points for obtaining a view of the ceremony were occupied. Lady Ellesmere and daughter, and Sir Charles Lyell and lady, were on the platform; as were also Mr. C. Wentworth Dilke, Mr. Whitworth, Professor Wilson, Mr. Augustus Belmont, United States Chargé to the Hague, and several Ministers, resident at Washington, for foreign countries. Lord Ellesmere was prevented attending the inauguration by a severe attack of gout. On the following day, the Directors of the Exhibition gave a complimentary banquet, at the Metropolitan Hotel, to the President of the United States, and the Commissioners from foreign nations, in attendance upon the Exhibition. The different specimens had not yet been arranged, and it was expected that the machinery court would not be in operation for two or three weeks, when the additional structure then in progress of erection would be completed. In the Statuary department, Thorwaldsen's group, representing our Saviour and the twelve Apostles, and Kiss's Amazon attracted general attention. The contributions from France had not arrived. The specimens contributed by the United States consisted principally of machinery, tools, and inventions of various kinds in the useful arts. Great Britain exhibits a large display of silver ware, as well as manufactured goods. The Zollverein and Germany have likewise contributed; and so also have Italy, Switzerland, Holland, and Austria. The latter country exhibits a very large collection of cutlery, manufactured at Vienna. The British possessions are said to be very fairly represented.

The Tobacco-pipe Trade.—It appears that this branch of trade is suffering from the excessive competition with the French fancy clay pipes. At one time the Dutch enjoyed a tolerable share of the pipe trade of this country, in consequence of their getting them neatly moulded. The British pipe makers, though possessing the best fields of clay for this purpose, are far behind both the French and the Dutch in the method of moulding fancy clay pipes. The effect of the competition has been, it would seem, to increase the number of the London tobacco-pipe manufacturers from three or four to about three or four hundred. The quantity of long pipes supposed to be made in London daily is a little above 1,000 gross; and if it is estimated that there are 350 men engaged in the work, this will give on an average, as the production of each man, about three gross per day. The price varies from 1*s.* to 1s. 6*d.* per gross. Several attempts have been made within the last few years to produce the ordinary clay pipes by machinery; and it is rather surprising that what would seem to be so simple a thing should not hitherto have been attended with success.

French Commercial Law.—The following decision was lately made by the Tribunal of Commerce for the Department of the Seine. It appears that a number of cafés had been established in the neighbourhood of the "Cirque Napoleon." The proprietor of this theatre being desirous of favouring one of the cafés, gave permission to Foubet, the landlord of it, to name his establishment the *Café du Cirque Napoléon.* Marchetti, the landlord of one of the neighbouring cafés persisted in calling his establishment by the same name, which he had previously adopted. Proceedings were then taken by Foubet against Marchetti to prevent the use of this name by him. Whilst these proceedings were pending, by some process known to the French law, Queranne and Commissaire, landlords of another café, interposed, and set up their right in the action to use the name, and claimed 5,000 francs damages. The court, after hearing all parties, and it appearing that the proprietor of the theatre was in no way concerned in Foubet's business, held that he had no power to authorize Foubet exclusively to use the name of his theatre, that the right to use the name was vested in the person first adopting it, and that neither Foubet nor Marchetti was entitled to its use, but that Queranne and Commissaire had the right, it being proved that they had been the first to use the name. No damages were awarded, as it did not appear that any had been sustained, but Foubet was condemned in all the costs.

Substitute for Bottle Corks. — M. Blain, a Frenchman, has invented a stopper for wine and other bottles, applicable also for jars, for anatomical preparations, preserved meats, and all other things requiring to be made air-tight. The stopper is made of glass, and is in shape like a mushroom, the stem being slightly smaller than the neck of the bottle or vessel. He takes a tube of vulcanized Indian-rubber about an inch long, and of such a size as when dilated it will fit closely to the exterior of the neck of the bottle, and inserts into one end of it the top of the stopper. It is then by means of a thread passing around the head, in a groove for that purpose, fixed securely in its place, the India-rubber tube standing like a chimney to the stopper. The bottle or vessel is then filled with the liquid, &c., to be preserved, and the stopper inserted. The India-rubber is then turned downwards, inside out, so as to cover the neck of the bottle, to which it is made fast by a string passing round it, under a projecting rim; the string being then brought to the top of the stopper, where it is sealed. It is said to be in extensive use, and to answer admirably.

Gas-lighting.—The town of Calcutta is about to be lit with gas. The Improvement Commissioners have issued notices requesting tenders for the whole of the works, on the understanding that they are to pay only a fixed price per mensem for each of a given number of lights.

Decimal Coinage.—The draft Report of the Committee of the House of Commons on this subject, has just been printed. From the evidence taken by the Committee, as to the effect of the changes of the coinage in the United States and Ireland, it is not apprehended that much difficulty or inconvenience will be experienced in making any change in the system here. In the United States, the old system of pounds, shillings, and pence, has been entirely superseded by the decimal system of dollars and cents; and in Ireland, the thirteen Irish pence, which formerly made an English shilling, has been substituted by twelve pence. The Committee are not of opinion that the difficulties arising from the necessity of a re-adjustment of a large number of existing contracts, and obligations based upon the present system, are in any way insuperable. They recommend that the present pound sterling should be retained as the basis or unit of the new decimal system, as being not only interwoven with all our ideas of value, but also because it is in itself admirably adapted for the purpose. Its tenth part already exists in the shape of the florin or two shilling piece; while an alteration of four per cent. in the present farthing, will serve to convert it into the lowest step of the decimal scale, which it is necessary to represent by means of an actual coin, viz., the thousandth part of a pound, to which it appears to the Committee the name of mil should be attached, in order to mark its relation to the unit of value. The addition of a coin to be called a cent. of the value of ten mils, and equal to the hundredth part of the pound, or the tenth part of the florin, would serve to complete the list of coins necessary to represent the moneys of account, which would accordingly be pounds, florins, (or dimes, as was proposed to the Committee, as expressing the relation of that coin to the pound) cents, and mils.

IRON SLEEPERS.—Messrs. Day and Laylee, of Ashford, have recently taken out a patent for semi-tubular wrought and cast iron transverse sleepers for railways. The sleepers are laid with their concave side downwards, and in those of wrought iron an opening is left at the centre, for the purpose of facilitating the perfect packing of the sleeper, for passing other rails for crossings, and also for convenience of drainage. In the cast iron sleeper this is accomplished by casting it in two pieces, and connecting them by means of wrought iron bars. Openings are left in the wrought iron sleeper to receive the rail seating, which is of cast iron in two pieces, a wooden key being used to tighten the rail in the usual manner. In the cast iron sleeper, the seating or chair and the sleeper are in one casting. It is said that to each 15 feet rail, the bearing surface of the sleepers will be 11¼ feet. It is presumed that by this plan the maintenance of the permanent way will cost less than one-half that of a line where ordinary wooden sleepers are used. The ready means of packing at the two ends, and from the central opening will, it is said, save labour; and the bearing surface of the sleeper being near the top of the ballast, a less thickness will suffice. The form of the sleeper, too, it is thought affords facility for a more perfect drainage than if it were solid; added to which the seating for the rail being 10 inches long, a greater bearing is obtained than with the ordinary chairs.

PARLIAMENTARY REPORTS.

SESSIONAL PRINTED PAPERS.

Par. No. *Delivered on 28th July*, 1853.
787. Railways (India)—Return.
788. Queen Charlotte's Island—Correspondence.
800. Bills—Customs, &c., Duties.
812. ,, —Dublin Carriage (amended.)
Public General Acts, Cap. 35, 36, 37, 38, 39, and 40.

Delivered on 29th July.

792. Westbury-on-Severn Union—Returns.
810. Metropolitan Commission of Sewers—Return.
692. Indian Territories—Fourth Report from Committee.
816. Bill—Turnpike Acts Continuance (Ireland.)
Prisons of Ireland—Thirty-first Report of Inspectors General.

Delivered on 30th July and 1st August.

794. Drainage (Ireland)—Return.
824. Civil Services, Estimates, Class 8.
384(1). Cockermouth Election—Index to Minutes of Evidence.
467(1). Harwich Election— Ditto ditto.
822. Drainage (Ireland)—Return.
832. Metropolitan Commission of Sewers—Return.
843. Navy—Supplementary Estimate.
825. Bills—Sheriffs (Scotland.)
827. ,, —Hackney Carriage Duties (amended.)
829. ,, —Smoke Nuisance Abatement (Metropolis.)
830. ,, —Ecclesiastical Leasing Act Amendment.
828. ,, —Customs (amended.)
828(a). ,, —Synopsis of Customs Bill.
844. ,, —Customs Acts Consolidation.
840. ,, —Assessed Taxes (amended.)
841. ,, —Missionary Bishops.
845. ,, —Insurance on Lives.
Convict Packets—Report.
Canterbury—Report of the Commissioners.
Convict Prisons—Lieut.-Col. Jebb's Report.

Delivered on 2nd August.

804. China—Return.
793. Foreign and Colonial Postage—Return.
819. Pilotage—Account.
821. Assessed Taxes (London)—Return.
846. New Houses of Parliament—Correspondence.
691. Accidents in Coal Mines—First Report from Committee.
831. Bills—Colonial Church Regulation.
842. ,, —Drainage of Lands (Ireland), amended.

Delivered on 3rd August.

395(1). Sheriff Courts (Scotland)—Return.
742. Sheriffs, &c. (Scotland)—Accounts.
751. Plymouth Election Petition (Further Inquiry)—Minutes of Evidence.
853. Bill—South Sea and other Annuities, Provision for Payment, &c.

PATENT LAW AMENDMENT ACT, 1852.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

From Gazette, 29th July, 1853.

Dated 18th June, 1853.

1485. G. Hannington—Producing railway and other tickets.
1487. J. F. D. de Bussac—Making with iodine, in combination with other substances, various elementary combinations. (A communication.)

Dated 20th June.

1512. J. Skertchly—Application of baths to articles used for resting the human body.

Dated 23rd June.

1531. P. A. le Comte de Fontainemoreau—A new distilling apparatus. (A communication.)

Dated 29th June.

1569. J. Imray—Motive power.

Dated 4th July.

1596. F. M. de Amezaga—Motive power.

Dated 6th July.

1611. W. W. Cook—Woven or textile fabrics.

Dated 9th July.

1634. J. and S. H. Parkes—Manufacturing mathematical instruments, and packing the same.

Dated 11th July.

1645. G. Ager—Holding and turning over leaves of music-books.
1649. H. B. Hopwood—Ships' ports or scuttles.

Dated 12th July.

1653. W. Levesley—Table-knife blades.
1655. J. H. Johnson—Preparation of glycerine. (A communication.)
1657. M. Samuelson—Bricks, &c.
1659. W. F. Snowden—Mangle.

Dated 13th July.

1661. H. M. Grover—Finding and indicating measurements of sines and cosines, &c.
1663. T. H. Bakewell—Ventilating mines.
1664. W. Williams—Electric telegraph.
1665. J. L Tabberner—Manufacture of iron.
1666. F. Ransome—Artificial stone.
1668. A. Fryer—Apparatus for reburning animal charcoal.

Dated 14th July.

1669. W. Needham and J. Kite—Machinery for pressing moisture from bodies.
1671. A. Carosio—Electro-magnetic apparatus.
1673. R. A. Brooman—Manufacture of anvils. (A communication.)
1675. G. Humphery—Regulating supply of water to water-closets.
1676. R. S. Bartlett—Manufacture of sewing-machine needles.
1677. J. Yule—Rotatory engines.
1678. W. Little—Manufacture of lubricating matters.
1679. B. Looker—Manufacture of bricks.

Dated 15th July.

1680. J. Nasmyth—Machinery for rolling plates and bars of iron, &c.
1681. G. Gowland—Nautical and surveying instruments.
1682. R. Gordon—Furnaces for consuming smoke.
1683. H. J. D'Huart—Pottery.
1685. C. Liddell—Moving boats on canals and rivers.
1686. H. Nathan and S. Elsner—Spectacle and reading-glasses.
1687. H. Bessemer—Refining sugar.
1688. C. Goodyear—Spreading or applying India-rubber on fabrics.
1689. H. Bessemer—Treatment of bastard sugar, &c.
1690. C. Goodyear—Manufacture of brushes, &c.
1691. H. Bessemer—Refining sugar.
1692. J. Taylor—Machinery for printing.
1693. C. Goodyear—Manufacture of pens, pencils, &c.
1694. C. Goodyear—Preparing india-rubber.
1695. C. Goodyear—Beds, seats, &c., to contain air.
1696. J. B. Jelic—Machinery for dressing thread.

Dated 16th July.

1698. E. R. Fayerman—Keeping time in music.
1699. H. Lamplough—Effervescing beverages.
1700. J. Rives—Hernia trusses.
1701. B. Burrows—Jacquard apparatus.
1702. J. Naylor—Lamps.
1703. S. Colt—Machinery for boring metals. (Partly a communication.)
1704. M. G. A. E. le Coat de Kervéguen—Wheel for motive power and propelling.
1705. J. W. Duncan—Adhesive soles and heels for boots, and apparatus for same.

Dated 18*th July.*

1706. J. Alexandre—Metallic pens and holders.
1707. W. Boggett—Knife-cleaning machines.
1709. T. Wood and G. Wade—Carding machinery.

Dated 19*th July.*

1712. P. A. le Comte de Fontainemoreau—Fastening buttons, and improved button and machinery for same. (A communication.)
1713. R. Dart and E. Silverwood—Loom machine for embroidery for badges, &c., requiring a succession of figures.
1714. C. Breese—Forming designs on papier maché, &c.

Dated 20*th July.*

1715. J. Robison—Apparatus for making tea, coffee, and other decoctions.
1717. E. D. Smith—Crushing and washing ores.
1718. J. S. Norton and H. J. Borie—Tiles and stairs of plastic materials.
1719. J. D. Goodman—Lanterns.
1720. P. P. de St. Charles—Stopping and starting vehicles.
1721. A. Cochran—Finishing muslins.
1722. J. Mills—Propelling carriages.

WEEKLY LIST OF PATENTS SEALED.

Sealed 28*th July*, 1853.

211. Louis Christian Koeffler, of Rochdale—Improvements in bleaching and dyeing.
221. Richard Archibald Brooman, of 166, Fleet-street—Improvements in cables. (A communication.)

Sealed 29*th July.*

222. Henry Avins and George Tarplee, of Birmingham—Invention of a new or improved brick.
224. John Standish, of Bolton—Improvements in machinery or apparatus used in the preparation of cotton, wool, flax, or other fibrous materials to be spun.
230. John Ryall Corry and James Barrett Corry, of Queen Camel, Somerset—Invention of a new or improved method of dressing lambskin leather, and cleaning the wool therefrom.
241. Jean Baptiste Lavanchy, of Tannige, Savoy—Improvements in the construction of collapsible framework of wood or iron, which may be employed for forming portable bedsteads, houses, parts of houses or bridges, and other similar structures, which may occasionally be required to be removed from place to place with facility, economy, and despatch.
287. Ismael Isaac Abadie and Henri Lauret, of Paris—Invention of a new or improved manufacture of parasols.
331. William Scott, Robert Brough, and James Rinoe, of Brighton, and Thomas Mann, of Stroud, Rochester—Improvements in steam-engines.
746. Samuel Newton, of Stockport, Chester—Invention of a self-acting friction-break, to be applied to engines, carriages, and wagons used on railways.
935. William Fawcett and Francis Best Fawcett, of Kidderminster—Improvements in the manufacture of carpets.
1059. Edwin Heywood, of Glusburn, near Keighley, Yorkshire—Improvements in apparatus for actuating and regulating the throttle-valves of steam-engines.
1080. Frederick Arnold, of Park-road, Barnsbury—Improvements in binding or covering books.
1218. Samuel Eccles and James Eccles, of Kensington, Philadelphia—Improvements in power-looms for weaving figured fabrics.
1280. James Lovell, of Glasgow—Improvements in heating and ventilating.
1317. François Francillon, of Puteaux, France—Improvements in dyeing and printing silk, wool, and other animal fibres.
1338. William Edward Newton, of 66, Chancery-lane—Invention of an improved construction of hand-stamp (A communication.)
1339. Joseph Morris, of Ashwood Bank, near Redditch—Improvements in the manufacture of envelopes for needles.

Sealed 30*th July.*

244. Thomas Knox, of Birmingham—Invention of a new or improved rotatory heel for boots and shoes.
247. Samuel Perks, of 1, Walbrook—Improvements in the mode of constructing certain works applicable to aqueducts, viaducts, railways, canals, rivers, docks, harbours, lighthouses, breakwaters, reservoirs, tunnels, sea-walls, embankments, submarine foundations, and other useful purposes.
248. Richard Palmer, of Bideford—Invention which may be used for cutting turnips, mangold wurtzel, carrots, and other roots, or for bruising them only, or reducing them to a pulp, and for mixing them with meal, as may be required, and also for grinding or crushing apples for cider.
259. William Pizzie, of Albourn, Wilts—Invention of a railway-carriage break.
260. Marc Louis Adam Tarin, of Mount-street, Grosvenor-square—Invention of an improved dust-pan.
261. Marc Louis Adam Tarin, of Mount-street, Grosvenor-square—Improvements in reflectors for diffusing light.
262. James Comins, of South Moulton, Devon—Invention of a clod-crusher, land-presser, or pulverizer.
264. Charles Cattanach, of Aberdeen—Invention of a certain apparatus for measuring the human figure, and transferring the said measurement to cloth.
265. John Pinkerton, of High-street, Borough—Invention of a new mode of applying and combining ornamented glass in the manufacture of useful and ornamental articles.
267. Charles Hadley, of Lower Hart-street, Birmingham—Improvements in the construction and formation of granite and stone pavements and surfaces for carriages and railways.
269. Eliezer Edwards, of Birmingham—Invention of a new or improved bedstead, which may be used as a vehicle.
1119. George William Jacob, of Dalston—Invention of an improved manufacture of metallic covers or seals for bottles, jars, and other like vessels, and in applying or affixing them.

Sealed 2*nd August.*

281. Auguste Edouard Loradoux Bellford, of 16, Castle-street, Holborn—Improvements in life-boats and vessels of a similar nature. (A communication.)
295. John Bower, of Dublin—Improvements in and applicable to certain descriptions of engines for driving piles.
317. Thomas Peacock, of Ashton-under-Lyne—Improvements in weaving, and in machinery for weaving hat-plush and other cut piled fabrics.
334. Richard Archibald Brooman, of 166, Fleet-street—Improvements in sail-hanks, for securing stay-sail jibs and other sails to their proper stays. (A communication.)
338. Thomas Allan, of Adelphi-terrace—Improvements in protecting telegraph wires.
339. Thomas Allan, of Adelphi-terrace—Improvements in galvanic batteries.
345. William Birkett, of Manningham Mills, Bradford, Yorkshire—Improvements in treating soap-suds or wash waters in which soap has been used.
408. Charles Shepherd, of Maestig Iron-works, near Bridgend—Invention of an improved stove and apparatus for heating air for blast purposes.
471. James Lawrence, of Colnbrook—Improvements in the drying or preparation of malt, meal, seeds, corn, and other grain.
473. Francis Preston, of Manchester—Improvements in the manufacture of certain parts of machinery to be used in preparing and spinning cotton or other fibrous materials.
500. Martyn John Roberts, of Woodbank, Gerrard's Cross, Bucks—Improvements in the manufacture of mordants or dyeing materials, which are in part applicable to the manufacture of a polishing powder.
1211. Moreton Hassall Phillips, of Shrewsbury—Invention of an improved gun.
1331. John Champney Bothams, of Vine-cottage, Londonderry-road, Camberwell-green—Improvements in steam-engines.
1347. Admiral the Earl of Dundonald, of Belgrave-road—Improvements in apparatus for laying pipes in the earth, and in the juncture of such pipes.
1391. Christopher Nickels, of Albany-road, Camberwell, and James Hobson, of Leicester—Improvements in weaving.

WEEKLY LIST OF DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

Date of Registration.	No. in the Register.	Title.	Proprietor's Name.	Address.
July 28	3496	Safety Roller Carriage Handle	John Purdy and John Young	1, Richard-street, Commercial-road East. 3, Spencer-street, St. George's-in-the-East.
„ „	3497	Cygnet Hook	Capt. Augustus Collinridge	South-street, Thurloe-square, Brompton.